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ABSTRACT

A study was conducted to determine the effectiveness of self-directed questioning on comprehension. The self-directed questioning strategy involved making predictions, defining evidence that generates the predictions, evaluating subsequent clues, and reformulating predictions when necessary or devising new ones when previous ones are confirmed. Subjects were 23 intermediate grade students, randomly assigned to two instructional groups. Each group received eight consecutive hour-long sessions, either teacher-directed preposed purpose setting and follow-up questions, or on-going self-directed questioning. Pretest and posttest scores were obtained using the New Developmental Reading Test. Results indicated that the self-directed questioning technique was effective for all readers in that group when asked to draw relationships between two important parts of the text. The technique did not significantly improve text explicit comprehension or creative comprehension, as measured by the reading for relationships subtest. Furthermore, this method significantly improved the text implicit comprehension for the low-verbal ability group, but not for the high-verbal ability group, indicating that less proficient readers profit from explicit instruction in reading comprehension. (HTH)

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THE EFFECTS OF ONGOING SELF-DIRECTED QUESTIONING ON SILENT COMPREHENSION

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A goal of reading comprehension instruction is to help students become independent readers who "read to learn" throughout their lifetime. The attainment of this goal is only possible through successful comprehension which requires an active construction of meaning. Therefore, comprehension and instructional practices which improve it, are the concerns of today's educators and researchers. In practice, reading comprehension instruction has consisted of questions posed by the teacher before and after reading a selected text. This study attempts to enlarge this concept of comprehension instruction to reflect current theories which contend that comprehension consists of an interaction between prior knowledge of the reader and the characteristics of the text. (Singer and Donlan, 1982; Pearson and Johnson, 1978) This new theory of comprehension means that reading is an active process where the reader asks questions about meaning before, during, and after reading a text. He talks to himself about the author's message and comprehension shifts between reader-based questioning and text-based questioning. While reading, the reader constructs a tenative model of meaning based on

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inferences about the author's intended meaning, asks and answers self-generated questions and evaluates his model of meaning according to goodness of fit. Therefore, the reader's personal interpretation of the world focuses his questions and directs the ongoing process of selecting, sorting and evaluating textual information in relation to his prior knowledge. As Pearson and Johnson (1978) state a "reader cannot help but interpret and alter what he reads in accordance with prior knowledge about the topic under discussion." (p. 24) .

For the purpose of this study, comprehension instruction was defined as the process where-by an individual student is guided through the process of predicting what is going to be communicated (questioning), selecting and sorting important information from the text (answering) and revising predictions based on reader-based processing and text-based processing (monitoring). Although many educators have stressed the necessity of a process approach to reading comprehension instruction, it appears that relatively little instruction in comprehension actually occurs in the public schools.

CLASSROOM PRACTICES

Durkin's study (1978) has pointed out that comprehension instruction as defined in this study is non-existent in the public school classrooms. What does occur is comprehension assessment in the form of loose interrogrations following the reading of a story.

Concentration is on right and wrong answers rather than questioning to form a cohesive story line. Her study consisted of a total of 39 classrooms in central Illinois. Grades three through six, levels at which schools believed they where teaching reading comprehension, were observed. Fourth grade was the major focus of the study involving 24 classrooms in 13 different schools. Reading instruction was observed for a total of 4469 minutes and Social Studies for a total 2775 minutes. At fourth grade, less than one percent (28 minutes) of the observed time was devoted to comprehension instruction, defined as something the teacher does or says to help children understand the meaning of more than a single, isolated word. Comprehension assessment, defined as something the teacher does or says to learn whether what was read was comprehended, comprised 17.65 percnt of the observed time. Teachers posed literal questions taken from the basal manuals and students were required to give right or wrong answers without having to justify their answers.

Since the major emphasis of comprehension instruction was comprehension assessment, we referred to a study conducted by Guszak (1967) to establish the amount and types of questions teachers ask students when discussing basal reader stories. He found that approximately 79 percent of the questions asked by second grade teachers were literal, but that sixth grade teachers used only 58 percent literal questions. This study indicates that teachers ask

predominately literal questions in classroom instruction with an increasing tendancy to ask more non-literal questions at the higher levels. Additionally, Pearson's reanalysis of the data shows that teachers discriminate between high-ability students and low-ability students. Although the percentage of literal comprehensions questions asked with high-ability students decreased between grades two and six, the percentage of literal questions asked of low-ability students remained the same. By sixth grade, half the questions asked the high-ability students had a non-literal emphasis, while only thirty percent of the questions asked the low-ability students had a non-literal emphasis. (Pearson, 1983)

SELF-QUESTIONING

Questioning is the most accessible method involved in facilitating reading comprehension (Van Jura, 1982) In the review of the literature conducted by Anderson and Biddle (1975) and studies conducted by Singer and Donlan (1982), it was found that when questions are preposed by the experimenter, comprehension narrows because readers are likely to focus only on the passages related to the preposed questions. In the classroom, questions that are preposed by the teacher encourage students to read to satisfy teachers purposes rather than their own. As a result, students assume a passive role, depending on the teacher to set the purpose and generate the questions. According to Baker (1979), students become dependent on the teacher to set the

purpose for reading, direct the learning, monitor understanding, and provide feedback.

Instruction which promotes shifting the locus of control from the teacher to the student tends to increase achievement substantially (Wong,1982). In other words, the reader must assume an active role in the meaning getting process. Singer and Donlan's (1978) conception of "active comprehension" involves reacting to the text with self-generated questions and seeking answers through continued reading. Frase and Schwartz (1975) reported two studies where the total recall scores for student-generated questioning and answering procedures was significantly higher than the studying only conditions. In one study the students worked in pairs asking and answering questions over the text for two sections of the text and in the other study the students were instructed to write questions. Andre' and Anderson (1978) trained students to generate questions about the main points. Using a read-reread control group, the results indicated that the question-generation training effects the test perfromance of low verbal ability students more than it effects the performance of high verbal ability students. In a second study, three groups were compared under different treatment conditions, a questioning-with training group, an untrained questioning group and read-reread control group. The results showed that the quesioning-with-training group scored higher, but not significantly, than the untrained questioning group and

significantly higher than the read-reread control. Again, the question-generation was most beneficial for low verbal ability students. Comparing two different treatment conditions with fifth grade students, Helfeldt and Lalik (1979) found that subjects, who were instructed in using reciprocal student-teacher questioning and answering scored significantly higher on a post-test used to measure interpretive reading abilities.

The results of these studies indicated that teacher-directed practice in constructing self-directed questions before, during or after reading text does increase comprehension. However, exactly how a teacher proceeds when guiding the student through the self-questioning process is still vague.

COMPREHENSION MONITORING

Self-monitoring of comprehension involves checking your model of meaning against the important information in the text and asking yourself if it makes sense. Effective readers tend to actively monitor their understanding of text through self-questions related to the text and their purposes for reading. Furthermore, when inconsistencies between their model of meaning, their purpose and the text appear, they reread and check the text for information to resolve this inconsistencies. (August, Flavel, and Clift, 1984) As students become independent readers, they employ this self-checking process more flexibly and become strategic readers. They monitor their comprehension and use

appropriate fix-up strategies when comprehension breaks down. (Winograd and Johnston, 1980) However, some research suggests that poor readers fail to recognize when the text does not make sense; therefore do not readily employ fix-up strategies. They fail to understand that reading involves checking the important information in text with their own model of meaning. (Paris, 1981) Thus, it appears that these readers would profit from direct instruction in the key processes of comprehension monitoring. Recent studies indicate that young and less proficient readers can learn this dual process of creating and regulating a model of meaning. (Brown and Palincsar, 1985)

THE MODEL: ONGOING SELF-DIRECTED QUESTIONING

Based on the self-instruction process developed by Meichembaum (1977), this instructional technique was devised to encourage self-questioning and self-statements about the reading/thinking process. Focusing on self-questioning, revision and self-reward, the procedures are used interchangeably with the teacher modeling the reading comprehension process reciprocally with the student. However, teacher modeling and direction in the process of self-questioning is systematically controlled; so that the teacher initially assumes direct control of instruction by modeling her own self-questioning during a story. This "think aloud" modeling allows the student to see a model of the steps of active comprehension. As the instructional procedure continues, the student and teacher reciprocally

model their self-questioning through this "think aloud" procedure. Next, the student assumes control of his own learning but still uses his "think aloud" to communicate his self-questioning, and finally, the "think aloud" is converted to covert silent reading process. Inherent in the model is the gradual shift from the predominance of the teacher "thinking aloud" using the procedure to the student "thinking aloud" using the procedure.

For this study an interchangeable sequence of self-statements were developed to provide a framework for modeling the inner dialogue that occurs while one reads. These statements guided the "think aloud" procedure (Walker and Mohr, 1984) The basic strategy of predicting what the author is going to say is encouraged by presenting reading as a bet with the author. The self-statement used is "I bet. . ." The betting is continued throughout the text as the strategies of prediction, reevaluation and revision are overtly modeled alternately between the students and the teacher. Secondly, the student makes a plan for active comprehension by reminding himself that he can use information he already knows and hints from the text to prove his bet. The self-statements "I already know that. . ." and "I must look for hints about. . ." are used to encourage active construction of a model of meaning. Next, the process of evaluation is modeled by talking about how the important information fits his model of meaning. "I must focus on important clues that the author gives me to

see if they fit" directs the reader and often requires rereading. So, the self-questions "Is this important information?" and "Does it fit?" are posed interchangeably with self-reinforcement statements like "Yes, that sure fits" or "Yeah, that makes sense." Again, these self-statements need to be modeled by the teacher. If a bet is confirmed, the student needs to reward himself by saying "Yeah, I was right."

As incongruencies between the expected story line and the text occur, the process of revising a prediction is modeled. The self-statement, "Ooops, that doesn't make sense, I better check the hints.", is used to encourage rereading for important information that is evaluated so the prediction can be revised. Coping statement like "I was right about. . . but wrong about. . ." are modeled as well as the coping statement for revision "Ooops, I can change my mind based on new information." The teacher must model this final stage so that the student realizes that comprehension is not just an evaluation by an external person on right or wrong answers. The steps of the model are presented below.

ONGOING SELF-DIRECTED QUESTIONING

STEP 1 - PROBLEM DEFINITION

What must I do?

I must guess what the author is going to say?

A good strategy is to use the title

From the title, I bet that. . .

STEP 2 - PLAN OF ACTION

Now, let's see what's my plan for betting.

a. To make my bet, I already know that. . .

b. To prove my bet, I must look for hints. . .

STEP 3 - SELF INSTRUCTION IN THE FORM OF SELF-QUESTIONING

I wonder how it fits?

The _____must be important because the author keeps talking about it.

It fits because. . . .

STEP 4 - WAYS OF COPING WITH FRUSTRATION AND FAILURE

Ooops, that doesn't make sense.

I need to check the hints.

So far, I'm right about. . ., but wrong about. . .

Ooops, I was wrong.

It's OK to make a mistake.

I can change my bet as I get more information.

From the new information, I bet that . .

or I wonder if. . .(recycle to step 1)

STEP 5 - SELF-REINFORCEMENT

I knew it, that sure fits. . .

So far I'm right!

Now, I bet the author. . .

(recycle to step 1)

METHOD

Subjects, 23 intermediate grade students, were ramdomly assigned to two instructional groups. Eight consecutive 60 minute lessons were taught by two different instructional methods: teacher-directed preposed purpose setting and

follow-up questioning for Group 1 and on-going self-directed questioning for Group 2. Using biographies from a third grade basal reader, the following procedures were used for each group.

Pre and post-test scores were obtained from the New Developmental Reading Tests - Form A/B. Oral retelling scores from a biography in the basal reader were used to divide the groups into low and high verbal ability students. Group pre- and post-test mean gain scores were computed for each subtest. The resultant gain scores were compared using separate t-tests.

Pre-tests

On the first day, the New Developmental Reading Tests-Form A was given to all subjects for the purpose of determining a standardized score for general reading comprehension prior to instruction. Secondly, all subjects silently read the same biographical story taken from a third-grade basal (Sunshine Days, Allyn and Bacon, 1978) never used by the school system. No assistance occurred before, during, or after silent reading. As subjects completed the story, each did an oral retelling which was recorded.

Instruction

During the two-week experiment, both groups met Monday through Thursday but received instruction at different times. Sixty minutes of instruction time was allotted for each group.

Group 1 - Teacher-Directed Preposed Purpose Setting and Follow-up Questioning

Prior to the reading process, the teacher posed 2-5 purpose setting questions taken from the basal manual. The "read to find out. . ." questions served to guide silent reading. The questions were presented orally and written on the board when requested by subjects, but no discussion occurred. Subjects read stories at their own pace without interruption.

Upon group completion, the teacher orally asked 10 follow-up questions related to, but more specific than, those preposed for purpose setting. The questions, 7 (70%) of which were literal and 3 (30%) of which were interpretive, were taken from the basal manual. Questions were answered orally by subjects through a teacher-directed discussion.

Group 2 - Ongoing Self-Directed Questioning

The first day of instruction, the teacher modeled the process and encouraged active involvement by gathering subject input prior to offering her own. Ideas were generated concerning what it means to predict and subjects were told they would be asking questions.

First, the teacher read the title and asked subjects to offer their predictions concerning the topic of the story. Next, subjects were asked to offer any prior knowledge about the topic.

To allow for teacher modeling (which faded in

subsequent lessons) and subject involvement, silent reading was interrupted as follows:

1) after the title

2) after the first paragraph

3) after the next 2 paragraphs

4) then, after every 3 paragraphs to completion

During interruptions, the steps of the process were implemented. The steps are used and reused interchangeably as the reader reconstructs the meaning of the text. The process used for this study was adopted from a model suggested by Walker (1983). For the purpose of this study, Step 3 was defined as the self-questioning step.

Post-tests

On the last day of the experiment, the New Developmental Reading Tests-Form B was given to all subjects.

RESULTS

Two hypotheses were proposed for this study. First, it was proposed that there would be a difference between the two groups (teacher-directed preposed purpose setting and follow-up questioning versus ongoing self-directed questioning) in the gain scores resulting from the pre- and post-test mean differences of each subtest of the New Developmental Reading Tests - Form A/B. Secondly, it was proposed that there would be a difference between low and high verbal ability students in the gain scores resulting from the pre-and post-test mean differences in each subtest

of the New Developmental Reading Tests - Form A/B.

Results of the t-test of mean gain scores between the two groups showed a signifcant difference ($p > .05$) on the reading for relationships subtest of the criterion measure. (See Table I) Furthermore, the results of the t-test of mean gain scores by instruction for the low verbal group further substantiated this finding at the .005 level of significance. (See Table II) The results for the high verbal ability group were not significant suggesting that the mean difference between the groups occured in the scores of the low ability groups. (See Table III)

TABLE 1

RESULTS OF t-TEST OF MEAN GAIN SCORES
BETWEEN ON-GOING SELF-DIRECTED QUESTIONING
AND TEACHER-DIRECTED PREPOSED QUESTIONING GROUPS
ON THE NEW DEVELOPMENTAL READING TEST

	POOLED VARIANCE ESTIMATE		
VARIABLE	t-VALUE	DEGREES OF FREEDOM	2-TAIL PROBABILITY
GENERAL	-1.70	21	.104
LITERAL	-1.82	21	.084
INFORMATION	- .46	21	.647
RELATIONSHIPS	-2.61	21	.016*
CREATIVE	- .80	21	.434
INTERPRETATIVE	- .15	21	.879
APPRECIATION	-1.17	21	.255

* P>.05

TABLE II

RESULTS OF t-TEST OF MEAN GAIN SCORES BY INSTRUCTION FOR THE LOW VERBAL GROUP

POOLED VARIANCE ESTIMATE

VARIABLE	t-VALUE	DEGREES OF FREEDOM	2-TAIL PROBABILITY
GENERAL	-0.11	9	.915
LITERAL	-1.51	9	.165
INFORMATION	.28	9	.783
RELATIONSHIPS	-3.93	9	.003*
CREATIVE	1.51	9	.166
INTERPRETATIVE	1.04	9	.327
APPRECIATION	.66	9	.526

*P $>$ .005

TABLE III

RESULTS OF t-TEST OF MEAN GAIN SCORES BY INSTRUCTION FOR THE HIGH VERBAL GROUP

		POOLED VARIANCE ESTIMATE	
VARIABLE	t-VALUE	DEGREES OF FREEDOM	2-TAIL PROBABILITY
GENERAL	-2.20	10	.052
LITERAL	-1.01	10	.338
INFORMATION	-0.96	10	.357
RELATIONSHIPS	-0.49	10	.635
CREATIVE	-2.14	10	.058
INTERPRETATIVE	-1.52	10	.160
APPRECIATION	-1.83	10	.097

DISCUSSION

The purpose of this study was to compare the effects of two types of instruction on reading comprehension. Because we concurred with Durkin that reading comprehension instruction is almost non-existant in the public schools, a procedure to model the inner dialogue that occurs when reading silently was developed. Research showed us that young and less proficient readers monitor their own comprehension less frequently than older and proficient readers. (Markman, 1979; Paris, 1983) Furthermore, previous research indicated that instruction which promotes a shifting of control from the teacher to the students increases reading achievement as well as reader independence. (Wong, 1982, Singer and Donlan, 1982) Therefore, comprehension instruction would be most efficient at the third, fourth, and fifth grade levels where students are developing self-control of the reading process. Thus a procedure to model inner dialogue and provide for a shift of control was devised to be meaningful at these grade levels.

Results indicated that this method was effective for all readers when asked to draw relationships between two important parts of the text. The technique did not significantly improve text explicit comprehension or creative comprehension, but did improve text implicit comprehension as measured by the reading for relationships subtest. Furthermore, this method significantly improved the text implicit comprehension for the low-verbal ability

group; but not for the high-verbal ability group indicating again that less proficient readers profit from explicit instruction in readng comprehension. This instruction helped them look for important information that fit their model of meaning.

Encouraging self-questioning and ways of dealing with frustration and mistakes are those procedures that teachers overlook in their frantic pace to cover all the material in the workbook. Using this procedural model, teacher questioning changed to open-ended prompting that generated self-questions and self-answers about the text. The following questions increased self-reflection on the student's model of meaning.

Is that important information?

Does that fit with your prediction?

What can you tell yourself about the . . . ?

What can you say to yourself when you change your bet? This procedure confirmed Durkin's position that "teaching that originates in the unplanned event may be not only more interesting for students, but also more instructive than what originates in commercially prepared materials or a teacher's carefully planned lesson." (Durkin, 1983 p. 365) Thus, in this "teachable moment" instruction needs to model those reading strategies that proficient readers use to revise the incongruencies of differing inferences about the text.

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